APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,812	03/18/2004	Lee Begeja	2003-0059 (ATT.0180000)	5880

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Law Office of Duane S. Kobayashi
1325 Murray Downs Way
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EXAMINER
HAN, QI

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
04/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07 February 2008</u>.

2a)☒ This action is FINAL.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The text of those sections of Title 35, U.S. Code not included in this action can be found
in a prior Office action.

Response to Amendment

2.   This communication is responsive to the applicant's amendment dated 02/07/2008. The
applicant(s) amended claims 1 and 9 (see the amendment: pages 2-4).

        The examiner withdraws the previous claim rejection under 35 USC 112 2nd, because the
applicant amended the corresponding claim(s).

Response to Arguments

3.   Applicant's arguments filed on 02/07/2008 with respect to the claim rejection under 35
USC 103, have been fully considered but are moot in view of the new ground(s) of rejection,
since the amended claims introduce new issue/matter and change the scope of the claims. It is
noted that the combined prior art still applicable to the amended claims under new ground
rejection (see below). It is also noted that the applicant's arguments regarding the unamended
limitations/claims have been fully considered but they are not persuasive (see below).

4.   In response to applicant's arguments with respect to claim 1 (also applied to claims 9 and
17) that "there is nothing in the teachings of column 4 (Attwater) that would lead one of skill in
the art to …believe or equate the predefined set of meaning associated the operation of the

classifier or spoken language understanding to refer to "call types" as that term is used in claim 1", "this concept of a call type is not found within the predefined set of meanings of Attwater et al.", "the process which is described in column 6 certainly does not involve modifying a plurality of call types…" (Remarks: page 8, paragraph 1 to page 10, paragraph 2), the examiner respectfully disagrees with applicant's arguments and has a different view of prior art teachings and claim interpretations.

Firstly, it is noted that the applicant's arguments only attract one cited reference, and totally silenced the teachings regarding the clustered/classified "call type" disclosed by the other reference (ARAI). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Secondly, it is noted that ATTWATER discloses 'recognizer … provides as an output a graph which represents sequences of words or sub-words which most closely resemble the received speech utterance', 'the output graph…are received by a classifier, which classifies the received graph according to according to a predefined set of meanings, with reference to a semantic model to form a semantic classification (col. 3, line 60 to col. 4, line 14), so that one of ordinary skill in the art would have recognized that when the received speech utterances involve call types the classifier would classify the graph associated with a call type according to a predefined set of meanings. Indeed, ATTWATER does disclose 'measuring the occurrence of particular types (call types) of telephone enquiry received in a call centre' (col. 3, lines 4-6), using 'data read from a corpus of call example' (col. 5, lines 35-37), 'determine the number and

types of calls', which clearly support or suggest that the processed speech directly/indirectly

involves or highly relates to determining "call type", and provide strong motivation for combine

the references. Similarly, since ATTWATER teaches that 'the sentences in supervised training

corpus 42 are clustered using clustering algorithm' and 'clusters thus generated are manually

checked' in which the words/phrases can be deleted or substituted (modified) in forming a

cluster (col. 6, lines 1-22), one of ordinary skill in the art would have recognized that supervised

training with manually checked clusters would provide capability of modifying the

clusters/classes for the transcribed data so as to form a different a language model (i.e. second

NLU model).

Thirdly, it also noted that the test for obviousness is not whether the features of a

secondary reference may be bodily incorporated into the structure of the primary reference; nor

is it that the claimed invention must be expressly suggested in any one or all of the references.

Rather, the test is what the combined teachings of the references would have suggested to those

of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this

case, both reference teaches using speech recognition, language model, clustering/classifying

speech utterances including semantic/meaning association with call types (as stated above).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify ARAI by combining the feature of using a candidate set of grammar

fragments associating the clustered call-types in the training transcription disclosed by ARAI

(col. 3, lines 1-60) and the feature of using supervised training and/or manually checking (or

transcribing) clusters with modifying capabilities, such as deleting or substituting, as taught by

ATTWATER (col. 6, lines 1-22), so that the call type of the candidate fragments associating the

utterances/transcription can be manually modified and another fully expanded salient fragment

network (second natural language understanding model) can be generated, for the purpose

(motivation) of generating more accurate transcriptions and/or improving call-type classification

performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22).

Regarding rest of dependent claims, the response to the applicant argument (Remarks:

page 10, paragraph 2-5) is based on the same reason stated above, because the arguments are

based on the same issue(s) as their independent claims (see above).

For above reasons, the rejection is sustained.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

5.   Claims 9-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed

invention.

Regarding claim 9, the limitations of "a natural language understanding model that

receive(s) input from the automatic speech (recognition) **module**" and "**a spoken language**

synthesizing module that receives input from the natural language module **to synthesize a**

spoken response" introduce new subject matter, which is not specifically described/disclosed in the original specification.

Regarding claims 10-16, the rejection is based on the same reason described for claim 9, because the dependent claims include the same or similar problematic limitation(s) as claim 9.

Claim Rejections - 35 USC § 103

6.   Claims 1-3, 5-6, 8-11, 13-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI (US 6,173,261) in view of ATTWATER et al. (US 6,839,671) hereinafter referenced as ATTWATER.

As per **claim 1,** ARAI discloses 'grammar fragment acquisition using syntactic and semantic clustering' (title) 'for recognizing and understanding fluently spoken languages' (abstract), comprising:

"collecting a plurality of utterances" (Fig. 9 and col. 9, lines 14-8, 'database (collection) of a large number of utterances');

"generating a plurality of call types, each generated call type being based on a first set of utterances selected from said collection of utterances, (col. 2, lines 13-35, 'clustering phrases into grammar fragments' that are associated to the utterances, 'generate a collection of grammar fragments each representing a set of syntactically and semantically similar phrases' and used to 'determine a call classification (a call type)'; Fig. 9 and col. 9, line 1 to col. 10, line 45, 'a set of candidate phrases having a probabilistic relationship with one or more of the set of predetermined routing objectives (including call types) with which the input speech utterances

are associated', 'call-type classification (generating call types)'; Fig. 2, also showing call types

having/associating the training transcriptions (corresponding to the first set of utterances));

     "generating a first natural language understanding model using call type information

contained within said first set of utterances"(col. 2, lines 6-9 and 20-35, 'to utilize these grammar

fragments (associating corresponding utterances) in language models (interpreted as natural

language understanding models) for both speech recognition and understanding', 'salient

sequences of these fragments may then be automatically acquired, which are then exploited by a

spoken understanding module to determine a call classification'; Figs. 11a-11c and col.10, lines

30-45, 'as a consequence of this expansion, a fully expanded salient fragment network (also

corresponding to the first natural language understanding model) is obtained (generated)');

     "testing said first natural language understanding model" (col. 9, lines 61-67, 'recognition

language model (natural language understanding model)', 'the training transcription contained

7,800 sentences while the test transcription contained 1000 sentences', which implies testing the

language model);

     Even though ARAI discloses that the grammar fragments formed from candidates

phrases that generated from the training transcription (based on the testing) can be sorted based

on call types (col. 6, lines 39-53), ARAI does not expressly disclose "**modifying** said plurality of

call types based on said testing" and "**generating a second** natural language understanding

model using said modified plurality of call types".   However, the feature is well known in the art

as evidenced by ATTWATER who discloses 'learning of dialogue states and language model of

spoken information system' (title) for creating 'a dialog model' using a training corpus of

example human-human dialogues (abstract), comprising 'a natural language call steering system'

in that 'the received speech utterance is analysed by the recognizer with reference to a language model' and using 'semantic model to form a semantic classification' that provides classifiers according to a predefined set of meanings (corresponding to call types) (col. 3, line 60 to col. 4, line 14), and teaches that 'the sentences in supervised training corpus 42 are clustered using clustering algorithm' and 'clusters thus generated are manually checked' in which the words/phrases can be deleted or substituted (modified) in forming a cluster (col. 6, lines 1-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that supervised training with manually checked clusters would provide capability of modifying the clusters/classes for the transcribed data so as to form a different language model, and to modify ARAI by combining the feature of using a candidate set of grammar fragments associating the clustered call-types in the training transcription disclosed by ARAI (col. 3, lines 1-60) and the feature of using supervised training and/or manually checking (or transcribing) clusters with modifying capabilities, such as deleting or substituting, as taught by ATTWATER (col. 6, lines 1-22), so that the call type of the candidate fragments associating the utterances/transcription can be manually modified and another fully expanded salient fragment network (second natural language understanding model) can be generated, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22).

As per **claim 2** (depending on claim 1), ARAI in view of ATTWATER further discloses "generating an annotation guide using a second set of utterances which is a subset of said first set of utterances" (ATTWATER: Fig. 3 and col. 5, lines 13-14, 'nodes... have been annotated with

operator utterance'; col. 11, lines 33-35, 'each call in the corpus can be annotated according to

the cluster of each operator utterance in the call', wherein the content of labels 26 in Fig.3, such

as 'greeting', can be reasonably interpreted as generated annotation guide as claimed; ARAI:

Fig.11C also suggests that the utterances corresponding to phrase 'collect call' (or 'collect phone

call') is a subset of the utterances of the consequence expansion (the model), so that it would

have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the teachings from ARAI and ATTWATER by providing generated annotation

(annotation guide) using a subset of utterances of the consequence expansion, for the purpose

(motivation) of generating more accurate transcriptions and/or improving call-type classification

performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22)).

As per **claim 3** (depending on claim 1), ARAI in view of ATTWATER further discloses

"generating call type data using at least **one of** data clustering, relevance feedback, string

searching, data mining, and active learning tools" (ARAI: Fig. 9, 'grammar fragment (data)

clustering'; ATTWATER: col. 5, lines 61-65, 'dynamic programming (DP) match (string

searching)').

As per **claim 5** (depending on claim 1), ARAI in view of ATTWATER further discloses

"said first natural language understanding model is trained using a first text file containing

utterances contained within said first set of utterances and a second text file containing call types

assigned to said utterances in said first text file" (ARAI: Fig. 9 and col. 9, line 4 to col. 10, line

45, wherein the 'database' with labeled utterances and training transcriptions necessarily include

text file/table (first text file) linking (containing) the corresponding utterances, and the phases

(text) classified with call types are also necessarily stored in a file or table (second text file) and linked (assigned) to the corresponding utterances; also see Figs. 7A-7C and 11A-11C).

As per **claim 6** (depending on claim 1), ARAI in view of ATTWATER further discloses "said natural language understanding model is tested using a subset of said first set of utterances" (ARAI: Fig. 9, 'test speech utterance' and 'input speech').

As per **claim 8** (depending on claim 1), ARAI in view of ATTWATER further discloses "said first natural language understanding model is created prior to an annotation guide" (ATTWATER: Fig. 3, wherein the content of labels 26, such as 'greeting', is interpreted as generated annotation guide; col. 11, lines 33-35, 'once the sentences in the training database have been clustered ...each call in the corpus can be annotated **according to the cluster** of each operator utterance in the call', which suggests the model is created prior to the annotation (guide)).

As per **claims 9-11, 13-14 and 16**, as best understood in view of the claim rejection under 35 USC 112 1st (see above), the rejection is based on the same reason described for claims 1-3, 5-6 and 8, because the claims recite the same or similar limitation(s) as claims 1-3, 5-6 and 8 respectively, wherein the combined teachings of a mechanism for 'speech recognition' (or 'the engine used for speech recognition') and 'speech synthesiser' (ARAI: col. 2, lines 6; col. 9, lines 61); ATTWATER: col. 3, line 60 to col. 4, line 23) are read on the claimed "automatic speech recognition module" and "spoken language synthesizing module".

As per **claims 17-20**, the rejection is based on the same reason described for claims 1-2 and 5-6, because it also reads on the limitations of claims 1-2 and 5-6 respectively.

7.   Claims 4, 7, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over

ARAI in view of ATTWATER as applied to claims 1 and 9, and further in view of MAES et al.

(US 2003/0088421) hereinafter referenced as MAES.

        As per **claim 4** (depending on claim 3), even though ARAI in view of ATTWATER

discloses generating call types, as stated above, ARAI in view of ATTWATER does not

expressly disclose "using a graphical user interface (GUI)." However, the feature is well known

in the art as evidenced by MAES who discloses 'application that supports multi-modal',

'conversational applications' utilizing 'NLU (natural language understanding)', 'multi-modal

interactive dialog comprises modalities such as speech, visual (GUI)…and a combination of such

modalities (e.g. speech and GUI)' (p(paragraph)46); and 'multi-modal browser application

comprise a GUI browser' (p73). Therefore, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to modify ARAI in view of ATTWATER by

combining the feature of generating call types as stated for claims 1 and 3, with feature of

supporting multi-modal applications including using GUI, as taught by MAES, for the purpose

(motivation) of better disambiguating and understanding the user's intention and/or displaying

the related presenting and updating information (MAES: p46, p244).

        As per **claim 7** (depending on claim 1), the rejection is based on the same reason

described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

        As per **claim 12** (depending on claim 11), the rejection is based on the same reason

described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

        As per **claim 15** (depending on claim 9), the rejection is based on the same reason

described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A

shortened statutory period for reply to this final action is set to expire THREE MONTHS from

the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the

mailing date of this final action and the advisory action is not mailed until after the end of the

THREE-MONTH shortened statutory period, then the shortened statutory period will expire on

the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory

period for reply expire later than SIX MONTHS from the date of this final action.

9.   Please address mail to be delivered by the United States Postal Service (USPS) as
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov.

QH/qh
April 17, 2008
/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626